

# A R Bathri Narayanan

Student in Integrated M.Sc,Physics

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[GitHub](#)

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## Work Experience/Projects

- **Semester Reading Project** Mumbai, MH, India  
*UM-DAE Centre for Excellence in Basic Sciences* *August 2024-Present*
  - **Guide:** Prof. Sudhir Ranjan Jain
  - **Skills learnt:** Quantum Information
  - We went through Prof. Miles Blencowe's paper on Analogue gravity with Superconducting qubits. We are now currently exploring Current mirror qubits
- **Summer Intern** Chennai, TN, India  
*The Institute of Mathematical Sciences* *May 2024-July 2024*
  - **Guide:** Dr. M. Padmanath
  - **Skills learnt:** Complex analysis, Python (Numpy, Scipy, Matplotlib, PyROOT)
  - Tried to write a code for finding the best fit Padé approximation. Also wrote code for modifying the square root of a complex number by shifting the branch cut to the positive real axis. My work will be useful for scattering data and ensuring analytic continuity
  - Certificate: [Click here](#) ; Report: [Click here](#)
- **Remote Intern** Guwahati, AS, India  
*Indian Institute of Technology, Guwahati* *June 2024-July 2024*
  - **Guide:** Prof. Amarendra Kumar Sarma
  - **Skills learnt:** Quantum entanglement, Quantum computing
  - Did a course with Prof. Sarma in NPTEL on Quantum Entanglement, and this project is an extension of the same. Read the works of Rasmussen et.al about superconducting qubits.
- **Intern** Mumbai, MH, India  
*UM-DAE Centre for excellence in Basic Sciences* *December 2023-April 2024*
  - **Guide:** Prof. Aameya Bhagwat
  - **Skills learnt:** Quantum Field Theory, Mathematical physics, Special Relativity
  - Did a mini reading project about introduction to Quantum Field Theory. Basics of quantum mechanics and special relativity was touched upon. Primary reference was Lancaster and Blundell's "Quantum Field Theory for the Gifted Amateur"
- **IASc SRFP Intern** Prayagraj, UP , India  
*Harish-Chandra Research Institute* *June 2023-August 2023*
  - **Guide:** Prof. Ujjwal Sen
  - **Skills learnt:** Quantum Information, Quantum Computing, Quantum Mechanics
  - Was selected under the Indian Academies of Sciences, Summer Research Fellowship Program 2023. Read about the basics of Quantum Mechanics (Ket notations), Classical and Quantum Information theory. Also applied the lessons of Quantum Information onto a simple classical problem of a Carnot engine and found out striking resemblances to its classical counterpart.
  - Certificate: [Click here](#)

## Education

- **University of Mumbai-Department of Atomic Energy  
Centre for Excellence in Basic Sciences** Mumbai,MH,India  
*Integrated Masters in Physics* 2021-2026(Present)  
– CGPA-8.04
- **Dayananda Anglo Vedic School** Chennai,TN,India  
*High School* 2007-2021  
– 10th Grade-96.4%, 12th Grade(Graduation)-96.2%

## Personal Statement

I am a Quantum Information, Computing and Particle physics enthusiast and have undergone training and projects in Department of Atomic Energy, Govt. of India's premier institutes (UM DAE CEBS, HRI and ISc) and also with IBM and NPTEL. I am currently in my fourth year of Integrated M.Sc at UM DAE Centre for Excellence in Basic Sciences.

## Certifications and Conferences

- **Attendee, Workshop on Superconducting Hardware** On-line  
*Multiple organizations* October 2024 - Present  
Projects working on:
  1. Design transmons of varying  $E_J/E_C$  and look for strategies to further reduce the surface participation ratio and radiative losses from the best found in the literature
  2. Specify two superconducting transmons using Qubit simulator and simulate their energy spectrum
- **Speaker, International Young Quantum Scientists Meet** On-line  
*Jaypee Institute of Information Technology* September 2024  
Topic: Search on Superconducting Qubits (Given on September 18th, 2024)  
Certificate : [Click here](#)
- **IBM Quantum Challenge** On-line  
*IBM Quantum* June 2024  
Certificate: [Click here](#)
- **Quantum Entanglement  
Fundamentals, Measures and Applications** On-line  
*NPTEL-IIT Guwahati* March 2024-April 2024  
*Instructor: Prof. Amarendra Kumar Sarma*  
Certificate: [Click here](#)
- **Graph Theory** On-line  
*NPTEL-IISER Pune* January 2024-March 2024  
*Instructor: Prof. Soumen Maity*  
Certificate: [Click here](#)

- **Problem solving and programming in C** On-line  
*NPTEL-IIT Kharagpur* *July 2023-October 2023*  
*Instructor: Prof. Anupam Basu*  
 Certificate: [Click here](#)
- **Basics of Quantum Information** On-line  
*IBM Quantum* *December 2023*  
*Instructor: Prof. John Watrous*
- **Fundamentals** On-line  
*Programming Hub* *December 2023*

## Awards, Grants & Honours

- Selected for Science Undergraduate Research Conference (Didn't attend) . . . . . 2024  
 Selected for International Young Quantum Meet . . . . . 2024  
 Selected for IMSc SRP . . . . . 2024  
 Completed the IBM Quantum Challenge . . . . . 2024  
 Selected for Indian Academy of Sciences SRFP . . . . . 2023  
 DAE-DISHA Scholarship . . . . . 2021-Present  
 Best student award . . . . . 2016  
 Bharat Vikas Parishad's [Bharat Ko Jano](#) . . . . . 2016-2021
- National level 2nd place(2021)
  - National level 4th place(2020)
  - Regional level 2nd place(2018)
  - National level 4th place (2017)
  - State level 1st place (2016)

## Experience and Position of responsibilities

- **Designer and Co-Coordinator, Novellus magazine** Mumbai,MH,India  
*UM DAE CEBS* *2023-Present*
  - Designed a few articles for the Novellus magazine which is the annual college magazine of CEBS. Organised a quiz competition for Samawaya 2023(Annual college cultural fest). Assumed position of Coordinator from July 2024.
- **Coordinator, Dance Club** Mumbai,MH,India  
*UM DAE CEBS* *2023*
  - Was the coordinator of "Pravah" which is the Dance club of CEBS. In this position, I oversaw the dance club's performance in the Inter IISER Culture Meets, Samawaya and organised workshops. I also opened the Instagram page of the same, which has some good social media presence
- **Member: Art Club, Science Club, CEBS Lifestyle** Mumbai,MH,India  
*UM DAE CEBS* *2022-Present*

- For the art club, I helped organise treasure hunt, decorations and arrange souvenirs. For CEBS Lifestyle, I helped posting content, clearing doubts for to-be CEBScients. For Science club, I helped organise events like Open Mic, Rendezvous etc.

- **Quizzing**

- *Independent*

- I have won many quiz competitions, and have lead the team for the same. I have also organised quiz selections for IICM and competitions for Samawaya.

## **Skills**

- Programming, Markup Languages and Software
  - Python(Numpy, Matplotlib, Scipy, Qiskit, PyROOT),  $\text{\LaTeX}$ , FORTRAN, C, ROOT (developed by CERN), GitHub, Adobe InDesign
- Spoken Languages
  - Tamil, English, Hindi (Completed all exams of [DBHPS](#)), German (A1)
- Other
  - Trekking, Photography, Dancing, Building connections, Quizzing